SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR
(AUTONOMOUS)
Siddharth Nagar, Narayanavanam Road – 517583
QUESTION BANK (DESCRIPTIVE)

Subject with Code : (18CS0505)computer Organization and Architecture
Course & Branch : B.Tech – CSE& CSIT
Year &Sem : II-B.Tech& I-Sem **Regulation : R18**

PART-A

UNIT – I
FUNCTIONAL BLOCKS OF A COMPUTER

1. Define memory Unit? [2M]
2. Explain the bus structure? [2M]
3. What is CPU? [2M]
4. Define instruction cycle? [2M]
5. Summarize data transfer instructions? [2M]
6. What are the types of Addressing modes? [2M]
7. Write the data manipulation instructions? [2M]
8. Define program counter? [2M]
9. Define MAR? [2M]
10. Draw the bus structure? [2M]

UNIT – II
DATA REPRESENTATION

1. Write about signed numbers? [2M]
2. Draw flowchart for Booth algorithm? [2M]
3. What are the steps for Booth's Multiplication? [2M]
4. Write memory reference instructions? [2M]
5. Draw the diagram for addition and subtraction of signed numbers? [2M]
6. What are the steps for division? [2M]
7. Draw the diagram for multiply in floating point operation? [2M]
8. Define fixed point representation? [2M]
9. What is ripple carry Adder? [2M]
10. Write the algorithm for restoring division? [2M]

UNIT – III
BASIC PROCESSING UNIT

1. Define register transfer language? [2M]
2. What is register transfer? [2M]
3. Draw the 4-bit bus structure? [2M]

4. What is memory transfer? [2M]
5. Draw the 4-bit incrementer? [2M]
6. What are the arithmetic micro operations? [2M]
7. Discuss logic micro operations? [2M]
8. What is shift micro operations? [2M]
9. Define hardwired control unit? [2M]
10. Define micro programmed control unit? [2M]

UNIT – IV

MEMORY ORGANIZATION

1. Draw the hierarchical memory structure? [2M]
2. List out the classification of semiconductor memories? [2M]
3. What is the importance of secondary memory? List out few. [2M]
4. How mapping functions are used in memory? [2M]
5. Explain the concept of page replacement algorithm? [2M]
6. Differentiate between SRAM & DRAM? [2M]
7. Discuss the working principal of EEPROM? [2M]
8. Explain the concept of address translation in virtual memory? [2M]
9. Draw the diagram IO subsystem? [2M]
10. What is the role DMA in peripheral devices? [2M]

UNIT –V

PIPELINIG & PARALLEL PROCESSORS

1. Define pipelining? [2M]
2. What is instruction hazard? [2M]
3. What is use of parallel processing? [2M]
4. What are characteristics of multiprocessors? [2M]
5. What are the classifications of parallel processing? [2M]
6. List out the interconnection structures? [2M]
7. Define cache coherency? [2M]
8. How parallel processing is achieved through pipelining? [2M]
9. Explain 8×8 omega network structure? [2M]
10. Draw the crossbar switching network? [2M]

PART-B

UNIT – I
FUNCTIONAL BLOCKS OF A COMPUTER

1. Draw the basic functional unit of computer and explain each unit in detail. [10 M]
2. Explain about the Structure of Bus and types of Bus with a neat diagram? [10 M]
3. a) Explain about Instruction Execution Cycle with neat diagram? [05 M]
   b) Write in detail about the Basic Operational Concepts with neat diagram ? [05 M]
4. a) List out the Computer Instructions and Explain about it. [06 M]
   b) What is Computer Registers and explain the types in it. [04 M]
5. Describe the Addressing Modes and its types? [10 M]
6. Write in detail about Data Manipulation Instructions and types in it. [10 M]
7. a) Summarize the Data Transfer Instructions? [05 M]
   b) What are the Program Control Instructions? [05 M]
8. Explain about Instruction set architecture of a CPU with neat diagram? [10 M]
9. Write about input-output subsystems with neat diagrams? [10 M]
10. Write the following. [10 M]
    a) Registers b) instruction set

UNIT – II

DATA REPRESENTATION

1. Draw the h/w Flowchart and h/w Algorithm for Add/Sub of SMR with an example. [10 M]
2. Explain the logic behind carry look-ahead adder with its circuit diagram? [10 M]
3. Draw the flowchart for Multiplication of positive numbers and steps with an example. [10 M]
4. Explain the techniques in computer arithmetic with example
   a) Ripple carry adder . [04 M]
   b) Carry look-ahead adder [06 M]
5. Write the Booth multiplication algorithm. Draw the flowchart and explain with an example?[10 M]
6. What are the steps of Division restoring and draw the flow chart? Explain with an example.[10 M]
7. Draw the h/w Flowchart and write algorithm for Division non-restoring with an example. [10 M]
8. Describe the Floating point numbers, its operations and implementing it. [10 M]
9. Explain the carry save multiplier with neat sketch. [10 M]
10. Show the step by step signed-operand multiplication process using Booth algorithm when (-9) and (-13) are multiplied. Assume 5-bit registers to hold signed numbers and (-9) to be the multiplicand. [10 M]

UNIT – III

BASIC PROCESSING UNIT

1. a) Show that the block diagram of the hardware that implements the following register transfer statement P: R2←R1. [06 M]
   b) Explain the way of constructing a 4-line common bus system with a neat diagram. [04 M]
2. a) Explain about three- state bus buffers with neat sketch. [06 M]
   b) Write about binary increment with neat sketch. [04 M]
3. What is Hardwired Control? Explain in detail with a neat diagram. [10 M]
4. Define register transfer language? Explain in detail. [10 M]
5. Describe the Micro Programmed Control with a neat sketch. [10 M]
6. Explain about Address Sequencing with neat diagram? [10 M]
7. a) Write about Bus transfer with neat diagram. [05 M]
   b) Summarize the Register Representations and way it is used. [05 M]
8. Explain in detail about Arithmetic Micro Operations? [10 M]
9. Write in detail about Logic Micro Operations with neat representations? [10 M]
10. Explain shift micro operations and draw 4 bit combinational circuit shifter [10 M]

UNIT – IV

MEMORY ORGANIZATION

1. a) Explain about Memory Hierarchy? [06 M]
   b) Explain about Memory Management Requirements? [04 M]
2. What is Main Memory and what are the types in it, Explain in detail. [10 M]
3. Explain about semiconductor RAM and its types in detail? [10 M]
4. Draw ROM and its types? [10 M]
5. Explain about Secondary Storage Devices in detail. [10 M]
6. What is Cache Memory? Explain in detail its mapping functions. . [10 M]
7. What is Virtual Memory? Discuss how paging helps in implementing virtual memory. [10 M]
8. Describe the use of DMA controllers in a computer system with a neat block diagram. [10 M]
9. List out few I/O Interfaces and explain about them. [10 M]
10. a) What are differences between RAM & ROM? [05 M]
    b) List out some differences between SRAM & DRAM? [05 M]

UNIT –V

PIPELINIG & PARALLEL PROCESSORS

1. a) Explain about Parallel Processing and its Types? [06 M]
   b) Describe the concept of Pipelining with clear example with neat sketch? [04 M]
2. a) Define parallel processing? How one can achieve parallel processing with single CPU. [06 M]
   b) Explain about characteristics of Multiprocessor? [04 M]
3. Explain about throughput and speed up of pipelining? [10 M]
4. Define hazards? Explain in detail about instruction hazards? [10 M]
5. Describe the Interconnection Structures in detail. [10 M]
6. a) Draw 8×8 omega switching network with explanation? [05 M]
   b) Explain crossbar switch with neat sketch? [05 M]
7. a) Draw multistage network and explain with neat sketch? [05 M]
   b) Write about hyper cube network with neat sketch? [05 M]
8. a) List out the conflicts in pipelining and explain about it [05 M]
   b) Explain about 4-segment Instruction Pipeline with neat diagram [05 M]
9. Describe the general classification of parallel processing systems. [10 M]
10. Briefly write about cache coherency? [10 M]